

GAD-FLIES (TABANIDÆ) OF THE GENUS STIBASOMA.

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The genus *Stibasoma* was established by Schiner for certain American species distinguishable from *Tabanus* by their robust appearance, broad and thick abdomen, long process of the third antennal joint, curved and thickened anterior tibiæ, and the broadly ciliate hind tibiæ. These characters are not equally well developed in all the species of the genus, and there is, on the other side, an approximation toward them in certain species of *Tabanus*, so that the genus may be said to be a rather weakly defined one. This is shown by the fact that even recent authors have failed to properly place some of the species. Yet the genus seems to represent a natural group.

The genus is restricted to tropical America exclusive of the Antilles, ranging from Mexico to Uruguay. The position of the species recently described from Australia by Prof. J. Surcouf, under the name *Stibasoma hemiptera* (Bigot MSS.), is uncertain and must be excluded, his specimen lacking the antennæ.¹ The ciliation of the legs must be considered a very unimportant character and one that could have been evolved independently in different regions. Indeed, it is developed to different degrees in different species of *Stibasoma* and in *S. fulvohirtus* there is no distinct ciliation on the front and middle tibiæ. On the other hand, there is an approach to the condition of the hind tibiæ of *Stibasoma* in certain species of *Tabanus*, where we find a well-marked ciliation. The condition of the first posterior cell of the wing, which Surcouf seems to consider as diagnostic, is variable in *Stibasoma*, and in the same species may be slightly narrowed toward the margin or continue of equal width.

Recently some specimens belonging in the genus *Stibasoma* were received for identification, and it became necessary to consult the literature on the group. A synopsis was published by Miss Gertrude Ricardo in 1904,² in which six species were referred to the genus.

¹ Note sur un Diptère piqueur du genre *Stibasoma* Schiner, Bull. Mus. Nat. d'Hist. Nat., 1912, pp. 61-63.

² Ann. Mag. Nat. Hist., ser. 7, vol. 14, pp. 360-362.

Since then some species have been characterized, and in addition certain of the older species described in *Tabanus* can be referred here with certainty. One specimen before me proves to belong to an undescribed species. Brèthes has referred to *Stibasoma* Macquart's *Tabanus fenestratus*, but, as it would seem, wrongly.¹ None of the characters peculiar to the genus are mentioned by Macquart, and his figure shows the antennæ without the characteristic long process on the third antennal joint and no ciliation on the hind tibiæ.² Whether Professor Brèthes had another species before him or a wrong conception of the genus does not appear.

A series of five specimens of *Stibasoma fulvohirtus* before me, taken by Prof. F. W. Ulrich, in Trinidad, makes it evident that the coloration of the vestiture, which is given primary importance in the separation of the species by Miss Ricardo, is subject to considerable variation, and therefore unreliable. This will appear from the notes which follow under some of the species. The wing coloration appears to be the most constant color-character, and therefore is employed as far as possible in the following table:

TABLE OF THE SPECIES.

1. Wings in great part black.....	2
Wings not black.....	7
2. Wings pale at extreme tip, but without pale discal spot.....	3
Wings with a pale discal spot.....	4
3. Body entirely black.....	<i>willistonii</i> Lutz.
Abdomen with a yellow basal band.....	<i>theotænia</i> (Wiedemann).
4. Discal spot extending to costa, yellow.....	<i>flavistigma</i> Hine.
Discal spot not extending to costa.....	5
5. Wings with discal spot "lurid".....	<i>mallophoroides</i> (Walker).
Wings with discal spot clear.....	6
6. Clear spot restricted to discal cell.....	<i>festivus</i> (Wiedemann).
Clear spot extending into second basal cell.....	<i>dyridophorum</i> , new species.
7. Wings clear, with two dark bands.....	<i>pachycephalum</i> Bigot
Wings yellow and gray.....	8
8. Wings yellow, gray on apical third.....	<i>tristis</i> (Wiedemann).
Wings gray along posterior margin.....	9
9. Body black, a yellow basal patch at sides of abdomen.....	<i>bicolor</i> Bigot.
Abdomen banded.....	10
10. Wings gray, yellow at base and anterior margin.....	<i>dives</i> (Walker).
Wings yellowish, gray at tip and along posterior margin.....	<i>fulvohirtus</i> (Wiedemann).

STIBASOMA WILLISTONII Lutz.

Stibasoma theotænia WILLISTON (not Wiedemann), Kans. Univ. Quart., vol. 3, 1895, p. 194.

Stibasoma willistonii LUTZ, Centralbl. Bakt., Abt. I, Orig., vol. 44, 1907, p. 143.

This species differs from *theotænia* by the absence of the yellow band at the base of the abdomen. Williston had a single male, and suppos-

¹ Anal. Mus. Nac. Buenos Aires, ser. 3, vol. 13, p. 475, 1911.

² Dipt. exot., vol. 1, part 1, p. 135, pl. 16, figs. 3, 1833.

ing the difference to be sexual, referred it to *theotænia*. Lutz states that he possesses many females which agree with this male in coloration, and therefore indicated a distinct species. The third antennal joint, in addition to the long dorsal process, shows an obtuse tooth on the lower side, although it is less marked than in the new species described below. Williston's specimen, which is before me, is from Chapada, in the interior of Brazil; Lutz records the species from Rio de Janeiro, São Paulo, and Santa Catharina.

As other species of *Stibasoma* show great variation in the coloration of the body vestiture, it is possible that *willistonii* is only a color variant of *theotænia*. A comparison of structures, such as the shape of the antennæ, should decide this point.

STIBASOMA THEOTÆNIA (Wiedemann).

Tabanus theotænia WIEDEMANN, Aussereurop. zweifl. Ins., vol. 1, 1828, p. 136.

Stibasoma theotænia SCHINER, Reise d. Novara, Dipt., 1868, p. 94.

Stibasoma thioætænia LUTZ, Centralbl. Bakt., Abt. I, Orig., vol. 44, 1907, p. 143.

Lutz states that he possesses a male which differs from the female only in the sexual characters. Unknown to me. Reported from Brazil and Montevideo.

STIBASOMA FLAVISTIGMA Hine.

Stibasoma flavistigma HINE, Ohio Nat., vol. 12, 1912, p. 516.

Described from a female collected in Vera Cruz, Mexico. Unknown to me.

STIBASOMA MALLOPHOROIDES (Walker).

Tabanus mallophoroides WALKER, Trans. Ent. Soc. Lond., n. ser., vol. 4, 1857, p. 123.

This species is unknown to me in nature, but its position is obvious from the description. Walker mentions not only the short stout body, but also the long process of the third antennal joint and the ciliation of the tibiæ. Furthermore, he states: "Allied to *T. festivus*, Wied." Amazon region.

STIBASOMA FESTIVUS (Wiedemann).

Tabanus festivus WIEDEMANN, Aussereurop. zweifl. Ins., vol. 1, 1828, p. 135.

Tabanus festivus WILLISTON, Kans. Univ. Quart., vol. 3, 1895, p. 195.

Through the courtesy of the American Museum of Natural History, I have before me Professor Williston's specimen, and, although the antennæ are broken, there can be no doubt that it is a typical *Stibasoma*. The specimen, a female, agrees in every respect with Wiedemann's description, except that the ciliation on the outer side of the hind tibiæ is yellow instead of snow-white, as indicated by Wiedemann. The specimen is from Chapada, Brazil.

STIBASOMA DYRIDOPHORUM, new species.

Body and legs dark, with black vestiture, the abdomen with yellow lateral patches at base; wings black, with the tips and a discal spot hyaline.

Female.—Antennæ black; third joint with an obtuse but prominent tooth on the lower side, and above with a long, thick process, slightly enlarged toward apex, rounded at tip, and reaching nearly to the apex of the third annulation. Frons narrow, nearly parallel-sided, the frontal callosity convex, elongate subovate, as wide as the frons, continued upward by a raised line which becomes obsolete toward the vertex. Face whitish pruinose. Cheeks with long black ciliation. Palpi black.

Thorax blackish brown, clothed with black hair, two indistinct reddish lines on the dorsum; humeri and ante-alar callosities yellowish brown; pleuræ brown, with black hair, a small tuft of snow-white hair close before wing insertion. Scutellum reddish brown, darker in the middle, with black hair (mostly rubbed off).

Abdomen dorsally reddish brown, the first and second segments pale, with dense lateral tufts of long sulphur-yellow hair and a mixture of black and yellow hair on the disk (somewhat abraded), the black hairs predominating; hind margin of second segment and all of the succeeding segments densely black haired. Venter ferruginous, the second and third segments with large quadrate lateral patches of dense sulphur-yellow hair, which are joined to the yellow patches of the dorsum; the remaining vestiture ferruginous, with some black hairs intermixed at the sides posteriorly, a tuft of black hair medianly at the base of the second segment.

Legs reddish brown, the front tibiæ thickened and blackish on the distal two-thirds; vestiture black, the hind tibiæ with long black ciliation with ferruginous luster on outer side and shorter bright ferruginous ciliation on inner side; hind tarsi with ferruginous hair. Claws black. Pulvilli and empodia yellow.

Wings rather narrow, smoky black, a triangular hyaline spot in the middle of the second submarginal cell, an elongate hyaline spot occupying most of the discal cell and extending well over into the second basal cell. Halteres with a pale greenish knob.

Length: Body about 14 mm.; wing 12 mm.

Trinidad, West Indies (P. L. Guppy).

Type.—Cat. No. 16362, U.S.N.M.

A single specimen sent by Prof. F. W. Urich, with the note "Followed the collector persistently."

The abdomen is more slender and tapering than usual in this genus, but this is no doubt due to the fact that the specimens had not fed. The obtuse tooth on the under side of the third antennal joint is present also in *S. willistonii*, although developed to a less degree. No such tooth exists in *S. fulvohirtus*.

STIBASOMA PACHYCEPHALUM Bigot.

Stibasoma pachycephalum BIGOT, Mém. Soc. Zool. France, vol. 5, 1892, p. 636.

Tabanus chionostigma OSTEN SACKEN, Biol. Centr. Amer., Dipt., vol. 1, 1886, p. 54, pl. 1, fig. 11.

This species is unknown to me, but from a comparison of the descriptions of Bigot and of Osten Sacken, and the latter's figure, the above synonymy is indicated. The figure in the *Biologia* shows a characteristic *Stibasoma*, except that the thickening of the fore tibiae is not distinctly shown. This may be easily due to oversight by the artist. The detailed figure of the antenna shows the usual process of the third joint, reaching beyond the second annulation and rounded at the tip. The descriptions do not wholly agree, but I believe the differences can be safely attributed to the individualities of the authors and more particularly to the superficiality of Bigot. Bigot's two specimens were from Mexico, Osten Sacken's specimen from Panama, Vera Paz, Guatemala.

STIBASOMA BICOLOR Bigot.

Stibasoma bicolor BIGOT, Mém. Soc. Zool. France, vol. 5, 1892, p. 636.

Stibasoma bicolor RICARDO, Ann. Mag. Nat. Hist., ser. 7, vol. 14, 1904, pp. 361, 362

Described from Brazil. Unknown to me. Miss Ricardo calls the wings hyaline, but Bigot distinctly states that they are gray; in other respects their descriptions agree. It is possible that in the specimen seen by Miss Ricardo the color of the wings was poorly developed. The coloration of the body appears to be much like *dyridophorum*, while the wings resemble those of *dives*.

STIBASOMA DIVES (Walker).

Tabanus dives WALKER, List Dipt. Brit. Mus., vol. 1, 1848, p. 166.

Stibasoma dives RICARDO, Ann. Mag. Nat. Hist., ser. 7, vol. 14, 1904, pp. 361, 362.

Described from the Amazon. Unknown to me. Apparently resembles *fulvohirtus* in many respects.

STIBASOMA TRISTIS (Wiedemann).

Tabanus tristis WIEDEMANN, Aussereurop. zweifl. Ins., vol. 1, 1828, p. 164.

Stibasoma tristis SCHINER, Reise d. Novara, Dipt., 1868, p. 94.

Brazil. Unknown to me.

STIBASOMA FULVOHIRTUS (Wiedemann).

Tabanus fulvohirtus WIEDEMANN, Aussereurop. zweifl. Ins., vol. 1, 1828, p. 155.

Tabanus compactus WALKER, List Dipt. Brit. Mus., vol. 5, 1854, p. 222.

Stibasoma fulvohirtum SCHINER, Reise d. Novara Dipt., 1868, p. 94.

Stibasoma fulvohirtum OSTEN SACKEN, Biol. Centr. Amer., Dipt., vol. 1, 1886, p. 57.

Five females from Trinidad, sent by Prof. F. W. Urich, are before me, and show remarkable variation in body coloration. Two of these, like Wiedemann's type, have the mesonotum and scutellum densely clothed with bright ferruginous yellow hair; these have the first

abdominal segment clothed with hair of the same color, while the succeeding segments are black-haired, with apical fringes of white hair. Wiedemann states that the abdomen of his specimen was dorsally yellow-haired in its whole length, with white segmental bands, and only the venter black-haired and white-banded. The three other specimens from Trinidad have the mesonotum and scutellum black-haired, with only some small tufts of pale brownish hair on the anterior and posterior angles; in these specimens the base of the abdomen is likewise black-haired. One of the three last described specimens even has the pleuræ black-haired, while in the other two the pleuræ are fulvous-haired. All five specimens agree in the coloration of the wings, which appears to be very constant, and also in the disposition of the black and white vestiture of the tibiæ. The specimens of Walker and Osten Sacken agree with the two first mentioned, while Schiner's specimen apparently belonged to the black form. Osten Sacken has discussed an equally extreme variation in the thoracic vestiture of *Tabanus atratus*.¹ *Stibasoma fulvohirtus* has been previously recorded from Brazil (Wiedemann), Ega (Teffé) on the upper Amazon (Walker-Ricardo), Colombia (Schiner), and Panama (Osten Sacken).

¹ Mem. Boston Soc. Nat. Hist., vol. 2, 1875, p. 455.